CLAIMS

What is claimed is:

1. A welding system for welding an element to a component, the system comprising:

(a) a welding head operably advancing and retracting the element relative to the welding head and operably welding the element to the component;

(b) a measurer operably measuring a relative position of the component to the element, wherein the measurer further comprises a foot mounted on the welding head, operably in physical contact with the component to determine the relative position of the component to the element; and

(c) a controller operably determining the position of the component relative to the element and operably moving the foot from an operating position to a rest position.

2. The system of Claim 1, further comprising a holder operably holding the element in the welding head.

3. The system of Claim 2, further comprising a linear motion device operably advancing and retracting the holder.

4. The system of Claim 2, further comprising a position sensor operably measuring the position of the holder relative to the component.

5. The system of Claim 1, wherein the controller determines the position when the element makes contact with the component.

6. The system of Claim 5, wherein the measurer electrically measures the position.

7. The system of Claim 5, wherein the welding head retracts the element at the contact.

8. The system of Claim 1, wherein the element is a metal stud and the component is a metal sheet.

9. The system of Claim 8, wherein the metal stud and the metal sheet are parts of a motor vehicle.

10. The system of Claim 1, wherein the controller determines the position with the foot in the operating position.

11. The system of Claim 1, wherein the controller determines the position with the foot in the rest position.

12. The system of Claim 1, further comprising a plurality of welding routines stored in the controller determining relative position of the component to the element and determining foot operation during each welding process.

13. The system of Claim 1 further comprising arc welding the element and the component.

14. The system of Claim 1, wherein the welding head is mounted on a robotic arm.

15. The system of Claim 14, wherein the arm moves in at least one coordinate axis.

16. The system of Claim 1, further comprising a plurality of welding heads.

17. A welding apparatus, the apparatus comprising:

a) a welding head;

b) a controller operably storing welding routines;

c) the controller operably controlling the welding head;

d) the controller operably determining measurement foot function; and

e) a measurer operably measuring a welding part distance.

18. The apparatus of Claim 17, wherein the distance is between parts to be welded.

19. The apparatus of Claim 18, wherein the parts are an element and a component.

20. The apparatus of Claim 19, wherein the element is a metal stud and the component are parts of a motor vehicle.

21. The apparatus of Claim 18, further comprising the measuring of the distance when there is a physical contact between the parts.

22. The apparatus of Claim 18, further comprising the measuring of the distance when there is an electrical contact between the parts.

23. The apparatus of Claim 17, wherein the controller determines the foot is operably in a rest position during the measuring.

24. The apparatus of Claim 17, wherein the controller determines the foot is operably in a measurement position during the measuring.

25. A method for welding an element to a component using a welder and a measurement foot, wherein the welder has a controller determining the position of the component relative to the element, the method comprising:

(a) storing a plurality of welding routines in the controller;

(b) moving the welder to a welding position as determined by one of the welding routines;

(c) determining the use of the measurement foot;

(d) measuring the position of the element relative to the component; and

(e) welding the element to the component.

26. The method of Claim 25, further comprising measuring the position on physical contact of the element to the component.

27. The method of Claim 26, further comprising electrically measuring the position.

28. The method of Claim 25, further comprising measuring the position using the measurement foot.

29. The method of Claim 25, further comprising measuring the position without the use of the foot.